The Builder.

VOL. VIII.—No. 361.] VOLUME FOR 1850. [SATURDAY, JAN. 5.

TURNING OVER A NEW LEAF.

IF we mistake not, the new-come year will be one of great activity, anxious struggle, and eager reformation. We see on our own particular horizon the evidence of movement in all directions, and we are prepared, to the extent of our ability, to record, make known, advocate, or oppose, as the circumstances may seem to demand; always honestly, even though it be weakly, and with an anxious *desire* at all times to do right, even though we may occasionally seem to be going wrong. We have so often set before our readers, on commencing a fresh volume, the intentions and scope of our work, that it cannot be necessary to do so now, or to make any fresh promises to induce our old readers and friends to stand by us. Suffice it to say, that so far from relaxing in our efforts to raise the character of THE BUILDER, and to effect those improvements and give that information which are its great objects, these endeavours will be increased, encouraged as we are by the success which has attended them. The estimation in which THE BUILDER is held throughout the United Kingdom, conveyed to us by many flattering testimonies, the influence it exercises, and its constantly increasing circulation—are much more than commensurate with its merits. It shall be our unceasing endeavour to render it worthy of the favour which is shown to it.

Our title, "THE BUILDER," is still erroneously regarded by many in a narrow and confined sense,—as appertaining simply to the wants and advantage of a class. Looked at properly, and it is gradually becoming more and more so, it has a wide significance, and embraces legitimately the consideration of subjects which ought to interest nine-tenths of the population.

As regards classes, we care no more for architects or engineers than we do for builders, —each in their province,—and we are as warmly anxious to assist in bettering the condition and raising the character of workmen as we are to obtain information for their masters, and to secure for all three that consideration on the part of the public to which they are entitled. Each is interested in the prosperity of the other; all, as we said in our closing article last week, are mutually dependent—portions of a brotherhood, wherein, however, there is necessarily a gradation of ranks.

In the elevation of the operative classes we feel the deepest interest, and we will not cease from impressing on them the importance of self-culture,—the acquirement of knowledge,—the abandonment of habits that degrade.

"Those who think must govern those who toil."

He who plies his muscles daily in one direction, without attempting to improve his faculties, by applying to them the mental resources of which the human race is so abundantly possessed, is but a degree less indolent than he who also refuses to give mere muscular exertion.

As a man obtains skill so does he become less a slave,—so will he find himself with greater intervals of leisure for further improvement,—so will he be able "to look around at nature and at art, and to devote somewhat of his life, between the cradle and the grave, to those nobler thoughts and aspirations, for which the human being can only prepare himself by shaking off the dust, and fleeing from the din, of busy life. It is thus that the great author, statesman, or engineer, while the world is wondering at the multiplicity and extent of the labours he accomplishes, may be met musing in the solitudes of the Alps; or perchance in these days, when his skilful labours have removed so many of the impediments of time and place, he may even find leisure to wander among the tombs of Thebes, or to gaze upon the Holy City. Alas! for the unskilled and unlaborious man, whose sole contribution to the exactness of busy civilization is some uniform movement of his body! The times are exacting; and since he fails to contribute his share in the intenseness of his exertion, he is bound to give it in continuity; to resign every hour seizable from needful rest, yet without satisfying his rigid master, the world. He is the true slave of civilization. He has not an hour which he can call his own. If his machine-like motion ceases, his bread ceases also; and every minute of relaxation must be bought with a portion of subsistence."*

If we urge similarly on those who are to be masters, and on some in higher stations, the importance of a stringent and comprehensive education, the right "leading forth," so to speak (*e-duco*), we must not be accused of vanity or presumption; the writer is too acutely sensible of his own deficiencies to be prompted by such feelings; the advice proceeds from a remembrance of wasted hours and neglected opportunities, and a desire to save others vain regrets in after life. Men are now pushing on vigorously; they who pause will be passed—if not crushed.

In the time that is coming the architect who would take a place, *and keep it*, will need to be well prepared; and all must see, with pleasure, evidences, among the students of to-day, that they feel this necessity, and are buckling on their armour. Let them remember the teaching of a Hindoo sage, quoted by Mr. Fergusson in his excellent work on "The Principles of Beauty." "An architect," says he, and Vitruvius said the same thing before him, "should be conversant in all sciences, ever attentive to his avocation; of an unblemished character; *generous, sincere, and devoid of enmity or jealousy.*"

We look for improvements in our own noble art in England: gradual they must necessarily be, but that they are coming we feel assured. Much was done towards this when we began to think with Boileau, that—

"*Rien n'est beau que le vrai, le vrai seul est aimable.*"*

The improvement of dwellings for the middle classes as well as the poor; the advancement of sanitary arrangements; the revision of the Metropolitan Buildings Act; the removal of the taxes on light, and bricks; the union of all persons connected with and interested in architecture, to be brought about by the removal of unwise restrictions in the laws of the Royal Institute of Architects; the improved administration of competitions; the proper recognition of artists; the establishment of the Provident Institution for Building Operatives;† improved supply of gas and pure water; the prevention of intra-mural burials and the provision of fitting places of interment (to which architects should now give consideration); improved modes of construction; the protection of the honourable and prudent builder against the speculative and dishonest,—are amongst the subjects which will claim our attention; and we shall regularly place before our readers correct illustrations of the principal new buildings that may be erected, and of such ancient works as may serve for models.

A continuance of the favour and consideration which have been shown to THE BUILDER, will go far towards ensuring to us, what we most cordially wish our readers,

A Happy New Year.

An index to our last volume, with title-page, is presented *gratuitously* with the present number. A title-page in colours may be had on application, also gratuitously, by those subscribers who prefer it to that which accompanies the index.‡

ON THE SUPPLY OF THE CATTLE MARKETS AND THE ABATTOIRS OF PARIS.

BEFORE adopting any definite measures for the re-organization of the cattle market of London, it may be advisable to examine those which are followed in other countries. Now, as the whole of the continent derives its organization, in these municipal affairs, from the example set by Paris; and as the system adopted there is unquestionably the most perfect, it may be useful to place before your readers some notes upon the subject? It is true that after the elaborate treatise of Mr. Grantham, and after Lord R. Grosvenor's evidence before the Smithfield Committee, such notes may appear superfluous. But neither of those gentlemen have given complete statistical information as to the supply of the markets; nor

* Hill's Social and Political Economy.

* "Nothing is beautiful but the *true*; truth alone is lovely."—*Prin. Dev.*

† Some of our readers will be glad to hear that the proposal made some time since to establish an "Architects' Benevolent Society," has now taken a form, and that an address from the promoters of it will be issued to the profession in a few days. Messrs. Cockerell, Barry, and Hardwick, have agreed to be trustees; Mr. Sydney Smirke, president, and Mr. Tite, treasurer.

‡ Covers for THE BUILDER may be obtained at the Office, price 2s., or the publisher will undertake to bind the numbers at 3s. per volume.

have they given the details connected with the construction, or the working of them, or of the abattoirs, necessary to a complete appreciation of all the details of the subject. Personally, I have been in a position, from a long residence in the country, to obtain access to documents they could not be aware of, in the course of their hurried visits; and, therefore, without pretending to exhaust the discussion, I flatter myself that the notes adjoined may elucidate some questions barely touched upon in their interesting communications. The subject, moreover, is of sufficient importance to excuse a trifling degree of repetition, in order to arrive at a perfect appreciation of the difficulties of the case, and of the most effectual means of obviating them.

Without further preamble, then, the district comprised within a circle of 100 kilomètres' radius of the Post-office of Paris (62½ miles English nearly), is supplied by the markets of Poissy and Sceaux, for the general qualities of butchers' meat; two markets for fat cows are held near Paris, at the ancient convent of the Bernardins, and at La Chapelle St. Denis; a market for calves is held also in the interior of Paris. Pig markets are held at Gentilly, La Chapelle, Montmorency, Arpajon, and St. Germain. These markets are held as follows:—Poissy, which is 27 kilomètres from Paris, on the Rouen Railway, every Thursday; Sceaux, which has also a railway, and is 11 kilomètres from Paris, every Monday. The cow markets are held every Tuesday and Friday. The calf market is held also on Tuesdays and Fridays. The pig markets are held at Gentilly on Tuesdays and Thursdays; at La Chapelle on the Thursdays; at Montmorency on Wednesdays; at Arpajon on Fridays; at St. Germain on Mondays.

Of these markets, those of Poissy and of Sceaux are the most important, our attention will therefore be principally confined to them.

The market of Poissy was built and enlarged under the direction and at the expense of the municipality of that town. It is situated in the valley of the Lower Seine, as was before observed, nearly 17 miles from Paris, with good pasture land, and watering places for the cattle arriving, or staying over the market. The plan is regular, and well adapted for the execution of the necessary measures for the security of public health. The surface at present occupied is 32,500 mètres superficial, or rather more than 8 acres English. The town intend, however, to augment it, so as to give a surface of 34,500 metres, or 8½ acres. At present it can contain about 2,400 cattle, 14,000 sheep, and 1,000 calves: the projected enlargement will carry the number of cattle to 3,000. The expense up to the present day has been 1,350,000f., without calculating the interest: the extension is estimated at 430,000f., making a total of 1,800,000f., or 72,000*l.* sterling. The average gross revenue from this outlay is 120,000f. per annum, which goes to defray the municipal expenses.

The dimensions given above are found to be sufficient for the frequentation of the market; for during the first three months of 1849, the average number of cattle sold was 1,540 bullocks, 115 cows, 628 calves, and 6,250 sheep. Probably the number of cattle not sold was one-sixteenth of those sold. The tolls levied are 75c. per head of cattle, 25c. per calf, and 10c. per sheep, sold.

The separations for the cattle are made by means of stout granite posts, into which wrought-iron bars are let, so as to form divisions 38 m. long by 4 m. wide (124 ft. 7 in. by 13 ft. 2 in. nearly). The posts are 1 ft. diameter above ground; top rail, 1¼ in. diameter, bottom rail ½ in. diameter; the top rail being 1 ft. 10 in. from the ground; the posts are 8 ft. 2 in. apart from centre to centre, except in the middle, where a passage is reserved for the buyers. The calves are exposed for sale upon a raised platform, entirely covered; the custom prevalent throughout France being to tie all four legs, and expose the unfortunate creatures for sale in that constrained position. The temporary pens for the sheep are made by means of wood hurdles let into wrought-iron posts, bedded on an asphalte platform, laid with a good transverse fall to throw off the rain, or other waters.

The great defect of the market is, that there are no means of watering the cattle but by taking them to the river. Works are, however, in progress to establish two large troughs (of the whole width of the market), slightly raised above the paved surface. The graziers criticize this arrangement, for they contend that cattle require to have their feet in the water whilst drinking; and that a watering place, with a sloped floor, would have been far preferable.

Cattle arriving at Poissy are either turned out to graze in the meadows by the side of the river, or they are lodged in the stables, or layers, belonging to the inhabitants of the town, previously to sale. The proprietors, or drivers, are bound, upon presenting the animals, to make a declaration to the clerk of the market, of the nature and provenance of the animals they expose. The animals are examined by a veterinary surgeon before being placed, and he is empowered to refuse such as are not in a fit state to be killed. The market begins, between 1st April and 1st September, from six o'clock in the morning till twelve for calves; from October to April, the market begins at seven. Throughout the year, the cattle market is held from eight to three; the sheep market from one to four. All cattle must be cleared away before four o'clock. A sale anywhere but upon the market, and between the legal hours, exposes to a fine of 100f., and the resiliation of the bargain. Cattle sold are conducted at once into a series of sheds, six in number; one of which is especially devoted to the animals destined to each of the separate abattoirs of Paris; and the sixth to the animals destined to the different towns of the Banlieu. They are driven on foot to Paris by drovers, under the immediate control of the prefect of police. These drovers are six for the bullocks, two for the cows, and two for the sheep: they are responsible for all the accidents which may arise during the transit of the animals from the markets of Sceaux or of Poissy, whether arising from the neglect of their *employés*, or from strangers. For this service they are paid 75c. per head of cattle; 2f. per bull; 10c. per sheep; and on the average 1f. 20c. per calf. The cattle are collected in droves of not more than forty each; the bulls are, by order of the police, obliged to be led at the tail of a cart, and well attached thereto; the calves are carried in carts, one on the top of the other, with their legs tied as before mentioned; the sheep are driven in flocks of about 150 each.

The market of Sceaux is smaller, less frequented, and not so well constructed as that of Poissy. It is indeed too small for the number of cattle exposed, and therefore it gives rise occasionally to scenes of cruelty worthy of Smithfield. The municipality of Sceaux either was not able to raise the money necessary to construct the market, or they had not the courage to undertake the works; for they let the construction upon lease of nineteen years' duration to a contractor. Until the expiration of his term, therefore, no great amelioration can be expected. The surface of the market is 29,230 mètres superficial; it would afford accommodation for 1,242 cattle and cows, 10,000 sheep, and 1,000 calves; the full average number exposed for sale is 1,400 cattle, 400 calves, and 9,000 sheep. Moreover, this number is likely to increase; for the central, and the Tours and Nantes Railways, are opening up fresh sources of supply. All the details of the working of the market are the same as at Poissy, with a slight variation in the hours. The cattle purchased at Poissy are obliged to be led into Paris, by the barrier "de Roule;" those purchased at Sceaux, by the barrier "d'Enfer."

In the year 1846, the last of which I have any authentic information, the number of cattle consumed in Paris from all the different cattle markets was as follows: — Bullocks, 80,272, of a mean value in the market (standing) of 352f. each; they were divided into three classes, as to value, weighing respectively 408 kilog. 3g., 362 kilog. 1g., and 264 kilog. 3g. each, or on the average, 345 kilog. 1g. Cows, 22,023, value 188f., weighing as before 309 kilog. 1g., 245 kilog. 2g., 205 kilog. 6g., and on average, 244 kilog. 1g. each. Calves, 84,216, value 81f. 84c., weighing 73 kilog. 1g., 63 kilog. 1g., 53 kilog. 1g., and on average 63 kilog. 1g. each. Sheep, 487,537, value 22f. 68c., weighing 23 kilog. 3g., 20 kilog. 2g., 17 kilog. 1g., and on average 20 kilog. each.

The ancient province of the Anjou furnishes the greatest number of cattle; next in importance are the departments of Calvados and the Orne. The bulk of the sheep are supplied by the department of the Seine Inférieure, but many arrive from the German States on the eastern frontier. The cattle, which are sent from the Anjou, are generally made to work from six to eight years, they are then fattened for two years on dry fodder. Those from the Calvados never work; they are grass fed, and sent to market from three to four years of age; they are by far the largest and finest race, and yield the most meat.

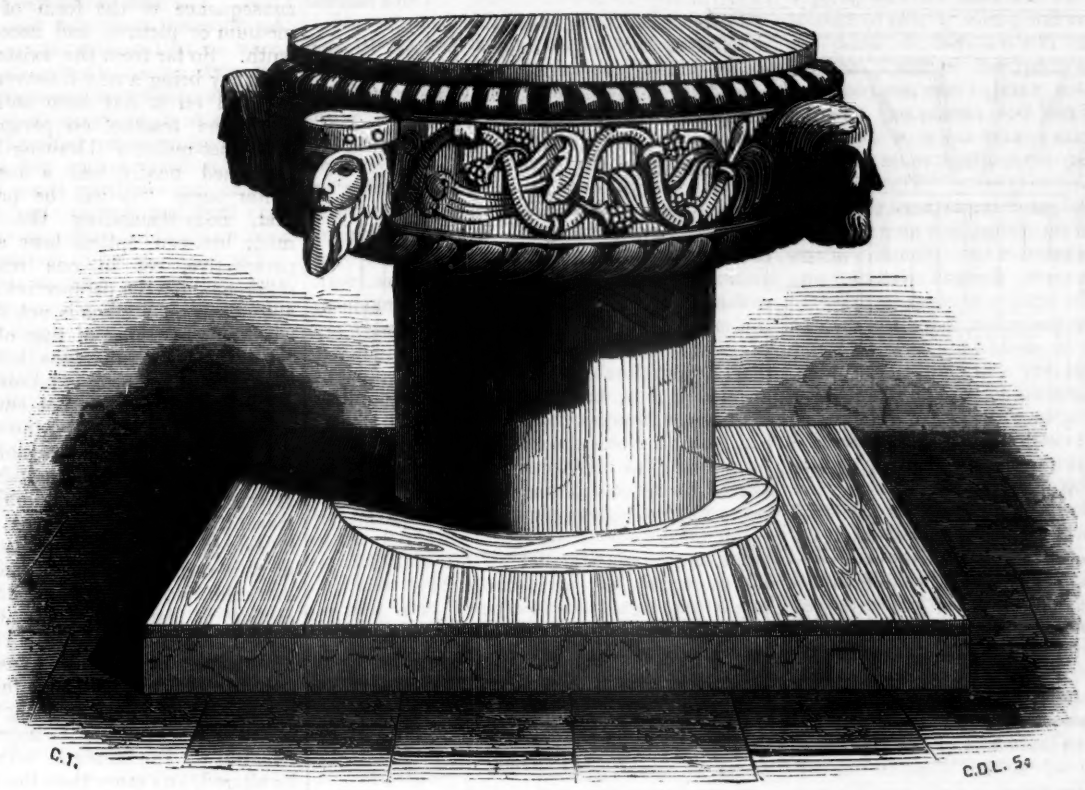
The cattle are led to market from the north-west by drovers, who travel from 15 to 18 miles per day, and who are paid at the rate of 2f. to 3f. per day, with an allowance of 10f. per day, for the feeding of the cattle. From the provinces to the south of Paris, the drovers are paid about the same, but they travel from 25 to 28 miles per day. The German sheep arrive in droves of from 120 to 150, travelling 8 to 10 miles per day; the drovers receive 20f. for the journey, and are fed upon the road. The French drovers conduct from 200 to 300 sheep, from 25 to 30 miles per day, and are paid 30f. per month, and fed upon the road. The calves are collected at the doors of the farm-houses, and carried to market at the rate of from 1f. 20c. to 1f. 50c., for a distance of 18 to 20 miles. It has been calculated that the larger portion of the cows do not travel on the average more than 15 miles; the bulk of the calves are furnished by the country within 75 miles from Paris; the sheep, within 125 miles from Paris, form one half the supply, the next quarter travel about 170 to 180 miles; the cattle are furnished to the extent of three-quarters of the whole number, by a zone extending from 120 to 180 miles from Paris: the rest have to travel distances of 250 to 380 miles.

The consumption of pork is upon the increase in Paris. For the ten years ending 1837 the consumption from all the different markets was 91,126 pigs, weighing on the average 75 kilog. each, of the value of 90f. In the year 1846 the number was 93,501, the average weight and value being the same. The regulations of the pig-markets are substantially the same as those of the cattle-markets; but the town of Paris not possessing at present any abattoirs for these animals, they are slaughtered in private establishments.

It is rather remarkable that, in spite of the progress of agriculture, the average weight of the cattle sold at the principal markets of France has progressively declined since the revolution of 1814. M. Millot gives, at least, the average weights since 1811 as follows:—before 1811 the cattle at Poissy weighed 350 kilog.; between 1820 and 1826 they weighed 330 kilog.; between 1837 and 1841, 327 kilog. The average has increased since then, for at the present day it is nearly equal to that of the first period. But at Sceaux it is still on the decline, for it is barely more than 312 kilog. In fact, the graziers of the southern and western provinces do not appear to have kept pace with those of the northern. The average consumption of butchers' meat per individual has also declined in a notable manner in Paris and throughout France. In 1789 it was 74 kilog. 30 g. per annum per individual; in 1826, 53 kilog. 45 g.; in 1839, 47 kilog. 48 g.; which average in Paris rose to 53 kilog. 75 g., and throughout the department of the Seine to 55 kilog. 62 g. Le Comte Darn arrived at an average rather lower, for he made it only 47 kilog. 87 g. for Paris, whilst he gives the average for London at 88 kilog., and for Brussels at 58 kilog. But these calculations are to be taken only as means of arriving at very incorrect comparisons of prosperity, for, as M. Thouret remarked, it is highly probable that a lower general average might accompany a more equal distribution. Thus, if 500,000 people consumed 100 kilog. each, and 100,000 consumed 10 kilog., the average would be 85 kilog.; whereas, if 600,000 consumed 100 kilog., and 400,000 consumed 30 kilog., the average would be but 72 kilog. Like all statistical results, the above tables, therefore, must be regarded as mere approximations; never as containing the real proportions of the consumption.* G. R. B.

* To be continued.

FONT, CHERRING CHURCH, BELGIUM.



FONT, CHERRING CHURCH, BELGIUM.

THE accompanying sketch of a curious font is from a village church on the high road to Tournay; the foliage around it, of Norman character, is in low relief. The heads of knights would lead me to think it an offering of some returned from perilous adventures. I could get no information on the subject.—J. L.

THE AIR-SYPHON.

THE notice which you took of Dr. Chowne's "Patent Air-Syphon System of Ventilation" has led many persons to inquire into it, and induces me to offer a few remarks upon its apparent paradoxicality. Both our present practice and theory would tend to prove the fallacy of Dr. Chowne's assertion, "that air circulates up the longer leg, and enters and moves down the shorter leg; and that this action is not prevented by making the shorter leg hot whilst the longer leg is cold."

The motion of air is produced (naturally) by a change of density, caused thermometrically, or hygrometrically,—or from the general principle by which the motion of a fluid is communicated to the lateral parts which are at rest. This communication of motion occurs in ordinary chimneys by the influence of air upon air, whenever the atmosphere is in motion, and impinging on the top of the chimney, either at a right angle or any greater angle. The effect, in Dr. Chowne's experiments, is produced by either one or other of these causes. In that which you describe as having been performed in his garden, the long leg ran over the top of the house, and, consequently, was exposed to a free current of air, from which the shorter leg in the garden was sheltered. In this case, the air moving over the top of the longer leg would communicate a motion to the air within it, which would far overpower the counteracting effect produced by the rarefaction of the shorter by the hot water: the effect might instantly be reversed by creating a stronger current over the mouth of the shorter leg. In connecting the various tubes from the room to his chimney, the effect is produced from the same cause, probably assisted by the rarefaction of the shaft by warm flues in the same stack.

If Dr. Chowne's theory be correct, how useless is Dr. Reid's enormous fire at the bottom of the longer leg of his syphon at the House of Commons (the shaft being 110 feet high), and how many hundred tons of fuel are annually wasted! Were Dr. Chowne's theory correct, how easy would it be to connect a descending stove, by a horizontal flue of unlimited length, to the chimney, or longer leg of the syphon, and always insure an upward current; yet every practical man knows that a great degree of rarefaction is required in the longer leg, or chimney, before the light gases generated in the stove can be made to descend and overcome the friction in the horizontal flue.

Neither is Dr. Chowne's *application* of the syphon new,—for in Tredgold's work "On Warming and Ventilation," p. 239, published in 1824, the inverted syphon is suggested, and recommended for the ventilation of rooms, although its action is there ascribed to very different causes than those laid down in the Doctor's specification. WM. JEAKES.

RAILWAY JOTTINGS.

THE Christmas movement of holiday-keepers has made, it seems, an extraordinary amount of traffic by rail this season. Even the Euston-station, it would almost appear, was scarcely large enough for the additional crowds and packages collected; at least a large temporary tent, 60 feet wide by 20 feet high, with half-a-dozen fires, and lit with gas purposely laid on, had to be there provided on the arrival side, and fifty to sixty porters were engaged day and night from Saturday to Tuesday morning in hauling hampers out of the way of arrival. Thirty to forty vans, &c., were constantly at work in the delivery of all sorts of provender and good cheer, piled in packages reaching often up to second-floor windows, where the less scrupulous and more needy might have readily helped themselves. The departure side was equally full of bustle and holiday business.——How the Great Midland artery has served its office in the circulation of so rich a flow of the social *pabulum vitæ* it is hard to say; for those essential capillary conductors of it to the body politic, the porters, have refused to do their office, on the ground of a deficiency in their own particular supply of the needful. They have been twice drained within the year, to the extent of 1s. a week each time, off 18s., and they think it hard that the directorial mismanagement and plunder should be repaid out of their pockets, which no one alleges have ever been either heavily or dishonestly filled,—a circumstance fully borne out by the fact that the porters of even a comparatively small and private company, such as Pickford's, have 20s. each per week, without a grumble. The obstruction of such a main way of the nation as the Midland, is itself a national question, however paltry and pitiful its basis. And over and above the inconvenience, confusion, loss, and danger,—when we look to the corruptibility of all animal tissue, whether flesh, fowl, or fish, and the loads of it accumulated in the Midland stations, the state of these stations at the present moment comes to be even a sanitary question of some little national importance to the public crowds frequenting them.——The masons, labourers, and others employed on the Sheffield station, &c., of the Manchester and Lincoln have been almost all paid off by the contractors, Messrs. Miller, Blackie, and Shortridge: the railway company, it is said, want funds. The Grimsby dock works, connected with the same line, have also been suspended.——It is proposed to make the railway arches at Manchester available as slaughter-houses.——Some leading capitalists, it is said, mean to offer to relieve the railway companies of all responsibility in the working of their lines, guaranteeing a certain per centage clear of all expense or risk.——Mr. John Wheatcroft, C.E., one of the contractors for the High Tor tunnels at Matlock Bath, has taken the contract for the cuttings and tunnel of an extension line from Crookslands to Lindal-lane, on the border of Lancashire.——A public entertainment has been given at Lowestoft to Mr. Peto, and it is proposed to call the new part of the town which has arisen in connection with the railway, harbour, and esplanade, by the name of Petoville.——A murder was lately committed in a French railway carriage. Such a crime could not occur during railway transit were the guards to have a regular beat as watchmen along the train, either outside or in; whereas, the helpless position of passengers, and, above all, of guards, at present, not only affords facilities, but actual temptations to crime. Such was the case in the late mail robberies on the Great Western.

LONDON IN 1543.—Whittock and Hyde have just published a large view of London, Westminster, and Southwark, as they appeared in 1543, from a drawing by Anthony Van Den Wyngrerde, in the Sutherland collection at the Bodleian Library, Oxford. The monastery at Bermondsey is added, from a drawing in the collection of the late Mr. Upcot. The whole was copied and engraved by Mr. N. Whittock, and makes a very interesting work.

WINDOWS FROM ROME.

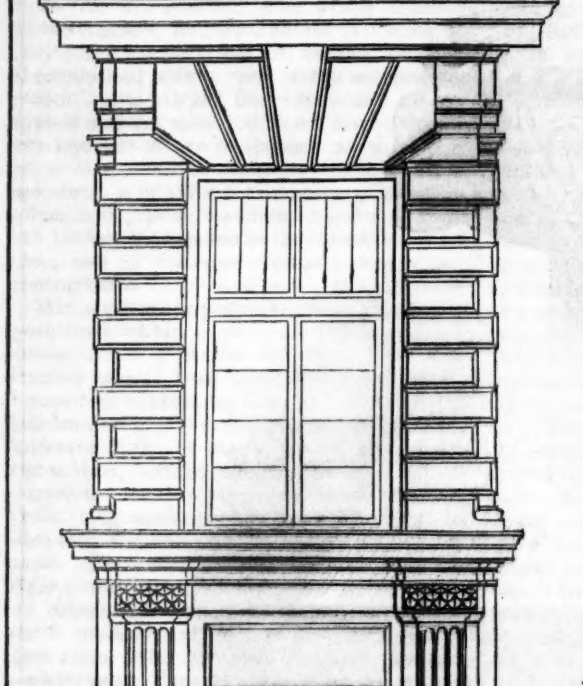


FIG. 1.

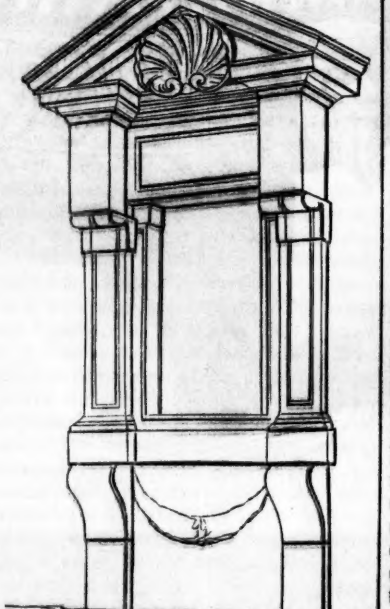


FIG. 2.

SUGGESTIONS FOR STREET ARCHITECTURE.

THE windows represented above, from sketches by Mr. Lewis, are both in Rome. Fig. 1 in the *Via del Clementino*, and fig. 2 near the *Porta Pia*.

A WORD IN DEFENCE OF LINEAR PERSPECTIVE AS AT PRESENT TAUGHT AND PRACTISED.

THE title of this paper will doubtless sound strangely in the ears of many who, knowing on what foundation it reposes, would, in the present state of science, as soon expect a defence of the Copernican system of the universe, as a vindication of the present fully developed system of perspective. But doubts, it appears, have arisen, and have found utterance in the pages of the *Art-Journal*, and in a manner which is calculated to unsettle the minds of those who merely have recourse to rules, and are but ill-grounded in those geometrical principles on which they are based, and which entitle linear perspective to take its place among the exact sciences.

The system of perspective, as at present practised, I need scarcely say, is of modern invention. Of the ancient notions on the subject we know nothing, though several Greek writers wrote upon it, for their works have not come down to us. We may gather, however, from paintings exhumed at Pompeii, that it was but little understood by the Romans.

For this system it is well known we are mainly, if not entirely, indebted to Dr. Brook Taylor, who may be considered, with the exception of some improvements and subsequent inventions to facilitate practice, and some additions to inverse perspective, by Hamilton, Noble, the two Maltons, and others, to have framed the entire system, as we have it at the present day. Vanishing points were known before his time: Guidus Ubaldus, a hundred years before, had discovered most of the leading principles of perspective, but stopped short of applying them to the varied positions of planes; Brook Taylor produced a theory that would embrace not only vanishing points, but the vanishing lines of planes in every position. He did not limit his rules to the horizontal plane, but provided for the representation of every species of planes and lines, whether horizontal, vertical, or oblique; and thus made his principles of universal application, and adapted for every purpose. He did not consider the horizontal plane as differing from the other planes; he considered them all alike. It is the position of these planes with respect to each other that is important, and this he made one of the new features of his system.

The subject we are upon has engaged the attention of some of the most able geometricians of this and other countries, amongst whom we find Ozanam, s'Gravesande, Pozzo, Maroloi, Fergusson, Emerson, Muller, Dr. Priestley, and many others eminent in science: several have written able treatises on the subject, and among these, Peter Nicholson, the indefatigable "practical builder," may be mentioned. He has stated and expounded it, and showed its geometrical origin and relations, in a concise and explicit manner, in his "New and Improved Practical Builder," and in his "Architectural Dictionary;" and perhaps as complete a view of perspective and projection appears in the latter work as could well be found.

My object in this essay is to state and elucidate the facts that have been overlooked by those who have fallen into the error referred to; to point out the true nature of the science, and the conditions on which a truthful result is obtained from it; thereby to allay, if possible, the doubts which have arisen in the minds of persons imperfectly acquainted with the subject. Those doubts and difficulties having once arisen in my own mind, I can, perhaps, the more readily furnish a key to their solution in the minds of others.

It is complained that the results of linear perspective, or the representation of objects, by its rules, on the picture, do not coincide with the results of vision; that outlines of architectural objects which have been sketched by the hand and eye alone, differ from their scenographic or perspective representation; and that, on the other hand, a representation of a building, made by an application of the theorems on which perspective is founded, compared by the eye with the original structure, will have its extremes apparently more expanded than those of the latter, exactly in proportion as the outline extends from its centre, or point of sight. It is concluded that because this is the case, the system is false. Now, it is a discrepancy between the actual drawing, and the appearance of its original to the eye, that is here meant; and the existence of this discrepancy I at once acknowledge, but at the same time maintain that it *should* exist, and will show, by-and-by, that if there were no such discrepancy, the picture would convey to the eye a false image of its original. Every person that understands the principles of perspective knew of this discrepancy,—knew also whence it arose,—that it was an inevitable consequence of the form of the perspective medium or picture, and necessary to ultimate truth. So far from the existence of this discrepancy being a new discovery, the objection founded on it has been anticipated in more than one treatise on perspective. In the "Cabinet-maker's Drawing-book," a work published nearly half a century ago, the writer says, "it will be proper to observe that, notwithstanding the general agreement between optical laws and the rules of perspective, yet in one respect there is a difference, for the perspective representation of any object on a plane is not the same exactly with the appearance of that object to the eye. * * * This difference, however, decreases the farther the object is removed from the eye, for then the rays do not cut the picture so obliquely; consequently, the representation of the original object on the plane of the picture is more natural, because it has more of the appearance of that original object to the eye." Here, though, from what he afterwards says, he evidently does not know how this disagreement is reconciled with ultimate truth of visual sensation, yet he does not conclude that the system is false. Of its entire truth he does not breathe a doubt. He perceives the disagreement to be the unavoidable result of the form of the perspective medium, and elsewhere says, "This art, being founded on geometry and optics, may be improved in its practice, but its fundamental principles can never be altered, any more than the nature of vision itself." And though Brook Taylor was perhaps not at first aware of it, to Malton, who took all his principles from him, it was well known; yet he nevertheless declares perspective to be at its *ne plus ultra*, and satisfactorily accounts for the origin of what, even then, had given rise to some cavilling.

The science of perspective is not founded, as has been asserted, on the supposition that the common planes, horizontal, vertical, and inclined, with which we are surrounded, are all perfectly flat in appearance, and that, consequently, all divisions, intersections, and terminations bounded by right lines, are usually straight lines. Perspective has nothing to do, so far as constructing the picture is concerned, with the laws of appearances, but is founded upon the following theorems:—1. "*The indefinite projection of a straight line, not parallel to the picture, passes through its intersecting and vanishing points.*" This is capable of a geometrical demonstration, which I need not occupy time and space to give. 2. *The projection of any plane figure, parallel to the picture, is similar to its original,*" for the visual rays that issue from the original to the eye form a pyramid, of which the picture is a section parallel to the base; but a section of a pyramid, parallel to its base, is similar to the base; therefore, the representation of any plane figure, parallel to the picture, is similar to the original. This is the basis of parallel perspective, to which my remarks will be more particularly confined.

Now, it should be borne in mind, that it is the projection in the picture of a right line or plane figure, not its appearance to the eye, that is here spoken of. The design of perspective is to represent objects on a definite surface (I am quoting a received definition of it), not as they immediately appear to the eye, but so as to affect the eye, when seen from a certain position, in the same manner as the object itself would when the eye is fixed on the point of view. It is, in fine, the art of projection on a plane, and the question for us to ask is, not how objects really appear to the eye, but whether perspective so represents them on this plane that the final result, viz., the impression imparted to the sense of vision by the picture, will be correct.

But before going further, it must be granted that rays of light from every point of visible objects travel to the eye in straight lines; and that all objects being viewed under an angle decreasing in proportion as they recede from the eye, decrease in apparent size. And it must be remembered that, to meet the various positions and forms of these objects have arisen most of those imaginary planes, horizontal, vertical, or inclined, which are treated of and used in perspective, and which engender

vanishing lines and points, by means of which the true place, on the picture, of any possible original point, may be found, and, by consequence, any line or superficies also.

Perspective has not committed the error, as has been asserted, of supposing that its laws, as a science, should only commence with the picture; and all who understand the art know well that any line represented in a picture is only a portion of a more extended line; that perspective makes the tour of creation, takes cognizance of all lines, planes, and solids, however extended, and can truly represent any.

With respect to the great celestial circles, the eye being situated in their plane, whether they be horizontal, vertical, or oblique, and equally distant from every point of their circumference, their visual representation must be by straight lines; but lines parallel to the horizon, and infinitely extended, vanish into it in points 180 degrees asunder; and this vanishing is common to the parallels of the other great circles, both perpendicular and inclined; and the eye not being situated in the planes of these parallels, they are visually curves. But any reasoning upon the laws of appearances, with respect to the circles of the heavens, whether greater or lesser, will be but little illustrative of the nature of perspective; and no result of such reasoning could affect its truth. Perspective has regard only (so far as producing the picture is concerned) to the laws of projection, and its province is the projection of lines, planes, and solids, on a flat surface; and whatever may be the deviation of the picture from the true natural appearance, all is made right, as regards the final issue, by the operation of those very laws, in viewing the picture, which are said to be broken; and a true image is, in the end, delineated on the retina of the eye.

For, let us suppose the front of a building some three or four hundred feet in length, and sixty or seventy in height, on level ground, crowned by a cornice perfectly horizontal, and entirely unbroken from end to end; this cornice will be its sky line, or terminal member to the eye. Let it be required to make a drawing of this front, by the rules of parallel perspective, supposing the spectator placed opposite its centre, and at such distance as to view the whole under an angle of about sixty degrees. The terminal member, or cornice, in this drawing will be a straight line, and parallel to the horizon. Now, we need not that one should come from the grave to tell us that this is not the true appearance of this cornice to the eye. It is not its visual representation, but it is its true scenographic or perspective representation on the plane of the picture. The cornice of the original building does not appear to the eye as a straight line (it could only so appear in the case of a crescent, with the eye placed in the centre of the arc). But, let this picture be hung up on a wall, and let a spectator place his eye opposite its centre, at the proper point of view, and he will, from it, have depicted on the retina of his eye (making due allowance of course for the imperfection of all manual operations) a true representation of the original building; for this representation of it has, if I may so speak, put itself in perspective to the eye: being seen under precisely the same condition as the original, it is evident it would present a distorted view to the eye, if its lines had undergone any change in their perspective representation. Now, as, in the original, the extremities of the building appear lower than the centre, so do they also in the picture, by an operation of the self-same optic law, that primary law by which objects decrease in size in proportion to their distance from the eye; and, to use perspective parlance, the pyramid of visual rays from the original to the eye, and that from the representation, are *similar*, and the apparent height of the extremities of the building, both in nature and in the picture, are to the height of the centre inversely as their distances from the eye. The line, therefore, of the cornice, though drawn straight upon the picture, appears curved, just as it does in nature. Under exactly the same circumstances as the original, it must obey the same laws; and if the plane of the picture extended infinitely on either hand, these lines, produced on it, would vanish in the horizon. A tightened cord placed between the eye and the cornice of this building, in the same plane with it, can prove nothing to the contrary, for, being in precisely the same position with respect to the eye as the cornice, it will become visually a curve, and decline too.

The same principle of illustration as that used above, will apply to any view parallel to the picture, whether it be the interior of a cathedral, or an exterior colonnade. In viewing the latter, it is evident that the columns will decrease in apparent height and diameter as they recede from the eye; but they must not be so represented in a picture, for the reasons before given; their due diminution is provided for by the laws of our sight operating whilst the picture is viewed, provided the spectator place himself at a proper point of distance and position. Now, there is a point of sight for every picture, and only one point, and every picture must be viewed from that point. It may be a historical subject, and consist of a group of figures, or of one figure, no matter which: that group, or that single figure, will have a distorted appearance, and a false impression of it will be conveyed to the sense of sight, unless viewed from the proper point. Even for a portrait there is but one point: the spectator must place himself in the same position with respect to the picture, as the artist occupied with respect to the person while painting him. It must be observed that the point of view from which a picture is taken should, in the first place, be at a proper distance; in other words, the view should be limited to somewhere about sixty deg. This is required not by a law of perspective, indicating any deficiency in the science or system adopted, but by the limit of vision, a law of nature herself, which does not permit us conveniently to see a much larger extent.

With regard to the vertical lines of a building or other object, it is evident that as the horizontal lines above the eye decline visually towards points on the horizon, so these, if not in the centre of the picture, must apparently incline towards the zenith, and are similarly curved; but for the reasons before adduced in reference to the horizontal lines, they must not be so drawn in the picture.

So far, therefore, from a drawing, by the hand and eye, being a true test of perspective, it must be understood that such representations cannot, viewed from whatever point, correctly convey an image of its original. This mode of representation, applied to edifices occupying a large portion of the picture, or seen under a large angle, would be sensibly erroneous; though in objects on a smaller scale, as in the case of landscape sketches, it may be sufficiently correct. When a building is to be represented on a scale of any magnitude, the rules of perspective must be called in, for it could not be correctly done by the hand and eye. By the latter method its true appearance would be delineated on the picture, but that representation, the operation of the law of optics would distort to the eye, and a false impression would be conveyed. The representation of objects by the hand and eye is not their projection on a plane, such as the picture, but on a sphere; and it is the projection on a sphere that can alone agree with true appearance or optical representation. A true projection may be made of an original object upon a surface of any species,—a surface curved to any of the conic sections; but the projection in perspective is on a plane, and it must of necessity differ from the projection on a sphere. Let lines be imagined or drawn representing these two media of projection. The line representing the plane of the picture will be a tangent to the arc which represents the segment of the sphere. Let the eye be supposed in its proper place, that is to say, in the centre of the latter; now, the difference between the projection of any object on the plane of the picture, and its visual appearance, is as the difference between that portion of the tangent intercepted by the radii forming the angle under which the object is seen, and the subtense of that angle or chord of its arc. It is obvious that the difference increases as the object recedes from the point of contact of the two surfaces of projection; but it is also obvious that the subtense or chord, and that portion of the tangent, must visually coincide to the eye, placed as supposed, which is its true position. The picture, in short, can be considered only as instrumental to the ultimate end of, by an artificial process, conveying to the eye the true appearance of objects in nature Perspective has only to do with the production of the picture, which is a projection of these objects, and its laws are so framed, that the picture drawn by them, and viewed at the proper point of distance, will unfailingly answer this end. Perspective has nothing to do with these objects, but to give a true projection of them on this plane; and this projection or representation, when viewed aright, yields to the eye a true representation of its original in nature.

I cordially agree with the objector, that, to obtain a true delineation of nature, is a point of the highest importance: "our sight," to quote a great English essayist, "is the most perfect and most delightful of all our senses; it fills the mind with the largest variety of ideas, converses with its objects at the greatest distance, and continues the longest in action without being tired or satiated with its proper enjoyments." And it is proportionably important that the result, upon the mind, of its activity, should be characterized by truth, whether it be occupied by visible objects, or by their representation in pictorial art: particularly that its laws be understood as far as they are required in the latter,—that art that can administer to more refined delight than even nature herself,—which furnishes the mind with some of its loftiest ideas, and contributes to the highest pleasures of the imagination. This point I cordially concede, but must maintain, nevertheless, that nature can be truly represented, and *is* truly represented, by the system of perspective as at present practised; and that it could be truly represented by no other system, without changing the perspective medium, an alternative which I think none will gravely propose.

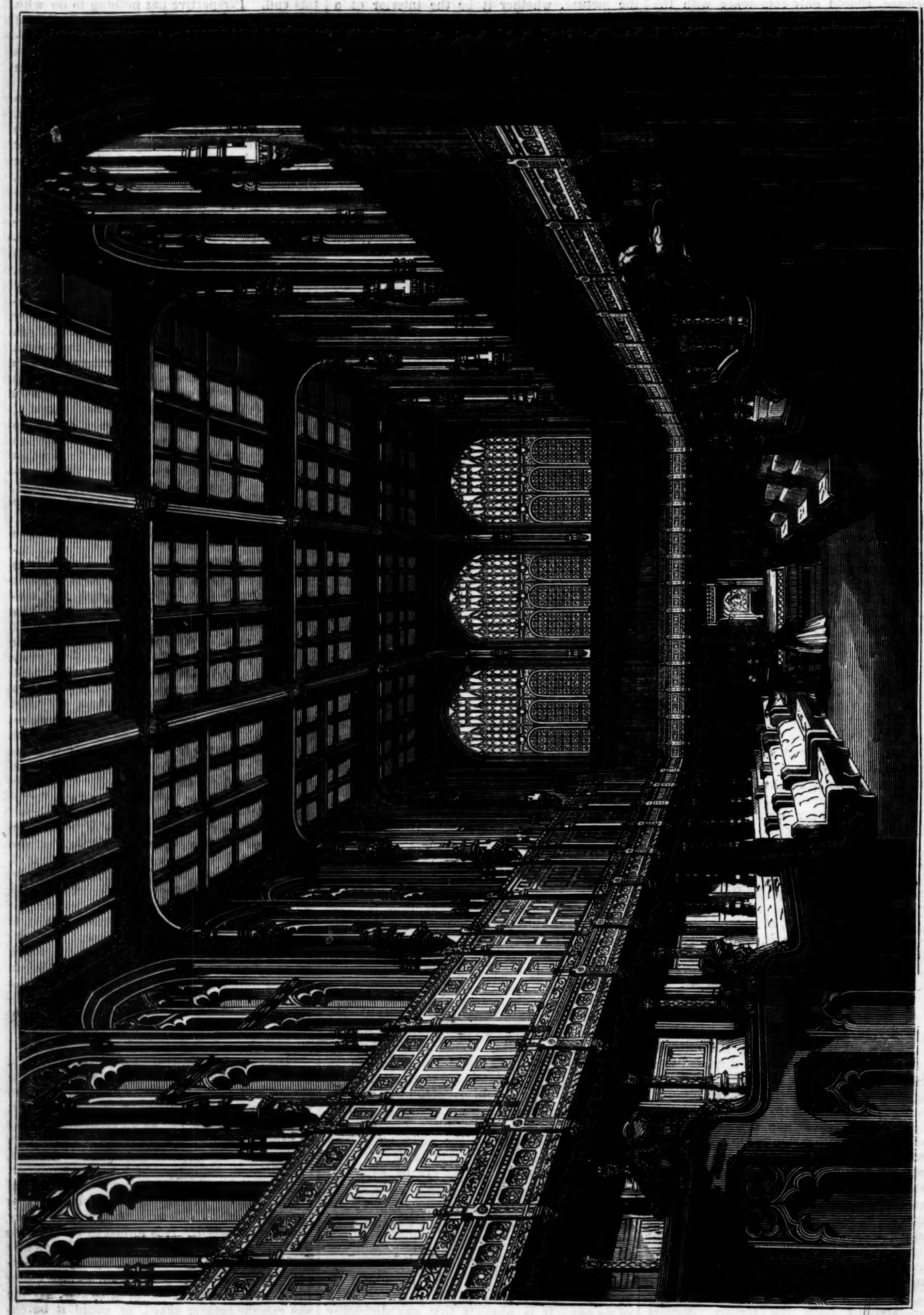
I admit that few practical sciences are more imperfectly understood. We see in many engraved illustrations of architecture, and in paintings too, not only by old masters, but also by those of the present day, though well managed with respect to the higher qualities of art,—for want of this knowledge, so ill drawn as to seem almost burlesques on their originals. By many otherwise clever artists now living, perspective is evidently but little understood; and by some of the old masters it was, probably, not understood at all. But are there not illustrations of architecture, by artists of the day, so drawn as to bear the impress of truth in this respect, as well as in every other? Is there any defect of the kind observable, for instance, in the landscapes of Turner, or in the Egyptian views and continental cathedrals of Roberts?

It is, in short, from an imperfect knowledge of it, from ignorance of its true nature, that the doubts and difficulties complained of arise. I believe that no man that thoroughly understood perspective ever expressed the opinion that it was not true. I believe also, that, by using it aright, the ultimatum is obtained, that it is entirely true, and requires no innovation or revision; and that, based on propositions which admit of mathematical demonstration, it can only be found false when the geometry of the Greeks is exploded.

S. HUGGINS.

GRATUITOUS SERVICES OF ARCHITECTS.—There has been much written of late on the subject of the architect's commission. I would now wish to call attention to another subject, which is almost as bad as an architect offering to execute works for 3 per cent., I allude to a professional man agreeing to furnish designs, specification, estimates, and superintendence, gratuitously, with the prospect or promise of such an offer leading to future business or commissions. This course is unjust in every sense of the word. It is unjust to those in the profession, and it is an act of injustice towards the party from whom such an offer is extracted. If a building is to be erected either for a charitable purpose, or otherwise, let me ask can the builder afford, or could it be expected that he could afford, to erect the building free of cost? Is it expected that the solicitor should draw up the agreements, &c., free of expense? Can the doctor afford to administer his advice or his medicines gratuitously? Can the clergyman afford his services gratuitously, or the tradesman his goods, &c.?

A. S.



THE NEW HOUSE OF COMMONS, WESTMINSTER.—MR. BARRY, R.A., ARCHITECT.

THE NEW HOUSE OF COMMONS.

We reported a few weeks ago the rapid approach of the House of Commons, in Mr. Barry's new Palace of Parliament, towards completion, and have now the pleasure of placing before our readers the first engraved view of it. The drawing is made looking towards the north, or speaker's end, with the "bar" of the House in the foreground. The ceiling is divided into eighteen compartments by moulded ribs, each space being again subdivided into panels. Over the speaker's chair is the reporters' gallery, formed like the other fittings throughout, of oak, and left of its natural colour. There is a metal railing above the front of the gallery. The traceried openings seen above the speaker's chair will be filled in with open metal-work, to screen a gallery to which ladies will be admitted. At the bar end is a much larger gallery for strangers. The floor of the House is of iron, perforated for the purpose of ventilation. The windows will be filled with stained glass; but there are no coloured decorations.

The length of the chamber is 62 feet, the width 45 feet, and the height 45 feet: nearly one-third less in length, therefore, than the House of Lords, which has the same width and height, and is a double cube.

The Commons' lobby, south of the bar, has a similarly-formed ceiling, in nine main divisions.

The connection of the Houses of Parliament with Westminster Hall, by means of an enormous archway nearly the whole height of the hall, is formed, although the steps are not yet constructed, and justifies our anticipations of its fine effect. This communicates with St. Stephen's Gallery,—the stonework of which is being cleaned down. The groin vaulted roof of this gallery is a fine piece of work.* The restoration of the Cloisters is being proceeded with: the beauty of the old work there is marvellous. From 300 to 400 men, in the whole, are at present engaged on the building.

COVENT GARDEN CHURCHYARD.

Though only a journeyman mason, I am a constant reader of your valuable periodical; and I may say, with *many* of my class, that I have been instructed, benefited, and encouraged by your remarks on the present condition, and suggestion for the improvement of the dwellings of the poor, which show us we are not *entirely* neglected and forgotten by our superiors, and that "better days are coming." The desecration of human remains from Covent Garden Churchyard, exposed in your publication of last week, and my having relations buried in that ground, caused me to make inquiry, and I find the facts were *worse* than your correspondent represented them. Surely such a *public outrage* on the feelings of humanity will cause inquiry to be made, as to the authors of such a scandal in the heart of the metropolis of the world. Will you be so kind, Sir, as to ease the feelings of a poor working man, by informing him whether there is any protection afforded for the remains of those buried in *consecrated ground?* or whether we are to reflect that, in after ages, our remains may be taken from where laid, and scattered about the streets, to make room for a brick grave, when required.

Joseph Rutherford.

*** We are able to state that the General Board of Health have directed Dr. Gavin Milroy to inquire officially into the circumstance mentioned by our correspondent.

Paint for Ironwork.—In reply to the inquiry of a correspondent, who asks what is the best covering to preserve wood and ironwork composing a suspension bridge, I beg to say that I have used with success two coats of red lead (minium or deutoxide of lead). A short time since, being on board a foreign steamer, I cut from the surface of the paddle-wheel the red paint, and found the ironwork bright and in no part injured by rust, excepting where the paint had been accidentally chipped off. A. B.

* St. Stephen's Gallery has eight large compartments beneath the windows for frescoes.

ON THE MANUFACTURE OF GLASS, AND ITS APPLICATION TO ARCHITECTURAL PURPOSES.*

The glass of commerce — that beautiful manufacture to which the generic name is most commonly applied—is always composed of some siliceous earth, the fusion and vitrification of which has been occasioned by the action of intense heat, when the silex is combined with certain alkaline earths, or salts, and sometimes with the aid of metallic oxides. In fact the article becomes a silicate, and may be termed a silicate of potash and soda, a silicate of alumina, a silicate of lime, &c., according as one or other of such substances predominates in combination with the silica. There are four different and distinct qualities of glass manufactured for domestic purposes, viz.:—1. Flint glass, or crystal; 2. Crown and German sheet glass; 3. Bottle or common green glass; and 4. Plate glass. The materials and processes used in making these form the subject of our present inquiry.

Each of the four descriptions contains two ingredients, which, indeed, are essential to their formation, silex, and an alkali. The variations of quality, and distinctive differences observable in glass, principally result from the kind of alkali employed, and its degree of purity, as well as from the addition of other accessory materials; such as nitre, oxide of lead or of manganese, white oxide of arsenic, borax, or chalk.

The following may be considered as the average proportions for the several materials employed in the various kinds of glass:—

Flint Glass, or Crystal.

Sand	50	58
Potash		19
Litharge	33	17
Nitre	17	6
	100	100

Crown or Sheet Glass.

Sand	38.5
Carbonate of lime	14.5
Carbonate of soda, 40 per cent. pure; or Sulphate of soda, 95 per cent. pure	18.0
Cullet	29.0
	100

If sulphate of soda be used, add charcoal 10lbs.

Bottle or Common Green Glass.

Sand	57	53.5
Lime	22	
Brickdust	14	13.5
Refuse of alkali works, or lixivium of soda		33
Silt	7	
	100	100

Black oxide of manganese has been long used for clearing glass from any foul colour, which it might accidentally possess through the impurity of the alkali employed, and in particular from that green tinge which marks the presence of iron. This property of manganese, when in the form of an oxide, occasioned it to be anciently known as glass soap, a name which very accurately describes it use.

These materials having been properly melted, the following is the process followed for making the crown glass:—

The implements used by the glass-blower are few in number, and exceedingly inartificial in their form and construction. The principal one is a hollow iron rod or tube called the pipe, which is about 6 feet 6 long, and 1 in diameter in the centre. At one end it has a handle about 12 inches long, and at the further end a nose: with this the gatherer continually dips the end into the mass of metal, and turning it round takes up a mass about 6 inches in diameter, and revolves it gently round, which makes it assume a spherical shape. He then dips it again into the pot, and takes up another quantity, altogether weighing about 11 or 12lbs., and keeps turning this gently round. He then takes it to the marver, which is a low slab of iron, perfectly level, and called marver from the French "marbre," because it used to be of marble. On this marver the man shapes the mass to a form somewhat like a pear.

It is then taken to another marver, No. 4, where a projecting point is given to it called the bullion, which afterwards becomes what we call the bull's eye. After shaping, it is taken to the blower at the Pattison hole of the furnace, who heats it and then takes it to the third marver, and makes it assume a flask shape. The man then takes it to the furnace to heat the mass, puts it over a rest, and blows it to a globular shape, and rests it in a bullion cup to support the globe against, while it is being blown to the full size.

In France, the blowing is effected by a very ingenious instrument, which our men however cannot be prevailed upon to adopt. But it is a very trying operation in some species of articles, as, for instance, the common wine bottles. Kohl, in his "Russia," mentions the following curious anecdote in connection with this subject. The emperor wished to illuminate the Alexander Column in a grand style; the size of the round lamps was indicated, and the glasses bespoken at this manufactory, where the workmen exerted themselves in vain, and almost blew the breath out of their bodies in the endeavour to obtain the desired magnitude. The commission must be executed, that was self-evident, but how? A great premium was offered to whoever should solve this problem. Again the human bellows toiled and puffed, their object seemed unattainable; when at last, a long-bearded Russian stepped forward and declared that he could do it; he had strong and sound lungs, he would only rince his mouth first with a little cold water to refresh them. He applied his mouth to the pipe and puffed to such purpose, that the vitreous ball swelled and swelled nearly to the required dimensions, up to it, beyond it. "Hold, hold," cried the lookers-on, "you are doing too much, and how did you do it at all?" "The matter is simple enough," answered the long beard; "but first, where is my premium?" And when he had clutched the promised bounty he explained. He had retained some of the water in his mouth, which had passed thence into the glowing ball, and there becoming steam, had rendered him this good service.

After being blown to the full size of 20 or 24 inches in diameter, the globe is taken to the bottoming-hole for heating, and blown still larger. It is exposed for the third time to the heat, and made to assume the shape of a flat-bottomed bottle. It is then carried to a rest which is near a cutter's box, so called, probably, because it is used for the next step of breaking off the neck from the other part or flattened sphere. It being put on the rest, a man or boy brings the punty or puntil, which has a piece of the like hot metal on the point or end, which he presses into a small mould to give it the proper shape, and then sticks it lightly upon the bullion, pressing it gently, and both turning together, and thus making the one adhere to the other. The man takes a wooden mallet, the edge of which he dips in the water, and then smears it at the neck where the more solid metal ends and the thin begins. Having so done, he gives a sharp blow with the mallet, and so detaches the pipe from the globe at the neck or nose, where a circular orifice is produced, 2 or 3 inches in diameter, called the nose. The punty sticker then carries the glass to the furnace, constantly revolving it, in order to heat the nose-hole.

After this it is carried to another hole of a furnace, called a flashing furnace, where the entire bottle is gradually warmed, first at the ring and then inside, the man constantly revolving it; the intense heat causes the nose to become very soft and yield to the expansive force of the other part; the revolving motion is increased in rapidity, the aperture gradually enlarges more and more, till the whole expands with a sudden burst or explosive sound into a large disk, about 4 feet 6 inches in diameter, the rim or selvage being somewhat thicker. The sheet is then carried to the chimney, where the punty is detached by the piler with a pair of shears, and the piler and his assistant take it up with a flat fork, called a forchette (from the French), put it into the annealing arch, where it is reared up on its edge, and remains there thirty-six hours, and acquires that hardness which enables it to be applied to the many purposes for which it is required.

The formation of this glass into sheets is thus performed:—The necessary quantity being collected upon the end of the iron tube, as already described, is expanded by the work-

* The substance of a paper by Professor Donaldson, read at the Institute of Architects, and already referred to.

man's breath into a globular, or rather, into an elliptical shape, of about 12 inches diameter, and of the requisite thickness. This done, the glass is carried to the mouth of the oven, and the end of the tube through which the workman has blown being closed, the further expansion by heat of the confined air causes the glass to burst in its weakest part and assume a cylindrical shape. While still hot and ductile it is then opened by a pair of shears or by a diamond through its entire length into a flat plate of larger dimensions than any produced in crown glass. It is then conveyed to the annealing oven.

The manufacture of this glass has been introduced from the continent in very recent times, and it is now made by some manufacturers in this country, and large quantities are imported from Belgium and elsewhere. The larger square pieces which are obtained of it are an improvement on the crown glass: when looked through it does not distort the objects so much as the commoner qualities of crown, but from its mode of manufacture it has not so good a surface; and, viewed externally, a building glazed with it, although in larger panes, does not look so well as if glazed with crown. Examples of this may be seen in many places in this country, and the shops in continental towns show its objectionable appearance most fully. It is made in this country in five different substances of the respective weights of 13, 16, 21, 26, and 32 ounces to the foot, while single crown glass is about 12, and the double about 16 ounces to the foot. Sheet glass readily takes a stain, and most beautiful colours are produced both in this country and abroad in it. The stouter kinds of sheet are sometimes ground and polished in imitation of plate glass, which it somewhat resembles, and is known by the name of "patent plate." This is a great improvement on sheet and crown, and to the uninitiated often passes for plate glass; and although brought to great perfection by Messrs. Chance, of Birmingham, it is of course inferior, both in size, substance, and correctness of reflection, to real plate.

The most important kind of glass now made is the plate glass, of which there are two descriptions: one of these is produced by casting the melted materials upon a plane metallic surface, somewhat in the manner pursued for making sheet lead; the other, by blowing and opening, in the manner of sheet glass. Plates of glass which are blown are necessarily limited in their size, although some of considerable dimensions are produced in this way. When cast, the extent of the plates may be much greater, and, indeed, is limited only by the very heavy expense attending the erection of machinery and the prosecution of the manufacture in its various parts.

The glass having been thoroughly refined, a large copper vessel, called the cuvette (which must be perfectly clean, and, as already mentioned, of a temperature equal with that of the glass) is filled in the following manner:—A copper ladle 10 to 12 inches in diameter, fixed to an iron handle 7 feet long, is plunged into the glass pot, and brought up filled with melted glass, which is transferred to cuvette; the ladle during this transference is supported upon a strong iron rest, placed under its bottom, and held by two other workmen. When by successive ladlings the cuvette is filled, it is suffered to remain during some hours in the furnace, that the air bubbles formed by this disturbance may have time to rise and disperse; an effect which is ascertained to have ensued by the inspection of samples withdrawn from time to time for the purpose.

As soon as the melted glass in the cuvette is found to be in the exact state that experience has pointed out as being most favourable for its flowing readily and equably, this vessel is withdrawn from the furnace by means of a crane, and is placed upon a low carriage, in order to its removal to the casting table. The cuvette is then wound up to a sufficient height by a crane, and by means of another simple piece of mechanism is swung over the upper end of the casting table, and being thrown into an inclined position a torrent of melted glass is suddenly poured out on the surface of the table, which must previously have been heated and wiped perfectly clean.

When the whole contents of the crucible have been delivered, a large hollow copper cylinder, which has been made perfectly true and smooth in a turning lathe, and which extends entirely across the table, resting on the side ribs, is set in motion, and the glass, during its progress, is spread out into a sheet of uniform breadth and thickness. The plate of glass thus formed having been sufficiently fixed by cooling, it is slipped from the table gradually and carefully into one of the annealing ovens, where it remains in a horizontal position for about fifteen days.

The processes followed in blowing plate-glass are, in most respects, similar to those used in fashioning sheet-glass, but some difference is observed; which, indeed, is occasioned as much through the increased bulk and weight of the mass under operation as on account of any real difference in the composition of the fabrics.

Plates which are blown are very limited in size, and cannot properly be made above 45, or at most 50 inches in length, and with a proportionate breadth. They have sometimes been made larger, but are then too thin to admit of their properly bearing the processes of grinding and polishing, and are besides liable to warp, which of course destroys their value when employed as mirrors. The rough or unpolished plate is to be had very cheap, from 10d. to 1s. 6d. per foot, and is now used most extensively, especially for roof lights. Surfaces to the extent of acres are now glazed with this rough plate, at the numerous railway stations throughout the country, and it is used for a great many purposes. It can be bent to almost any form required, so that spherical lights may be glazed with it; a good example of which may be seen in the new Coal Exchange in the City of London. A single piece of rough plate may be bent so as to form a lunette or dome of itself, which is a most convenient and economical way of obtaining a roof light. It can also be impressed with a pattern in the course of casting, such as the diamond pattern given to what is called "Venetian plate." This, when polished on the plain side, makes a very useful and beautiful article to transmit light, and prevent objects being seen through. If the object be to exclude the sun's rays entirely, and to form a complete blind, then rough plate, ground or obscured on one side, answers the purpose admirably. And this also can be bent into domes or portions of spherical skylights.

Rough plate glass is also cast very thick, from ½ inch to 2 inches thick, and is used to be let into floors and staircases to admit light below. Its great substance and strength enables it to bear any weight without breaking. Many articles of great use are made of rough plate glass, among which plates for tiles and slates may be mentioned as more directly connected with building purposes. For many purposes, when as much transparency as can be had is wanted, compatible with the cheapness and strength of rough plate, blown rough plate is preferable, as being the more transparent.

A purpose to which plate glass has very recently been put, is the formation of transparent ventilators, by perforating it in process of manufacture and while hot. The result is a piece of glass filled with long narrow openings which admit air in a diffused manner, and at the same time does the duty of an ordinary pane of glass for the transmission of light.

The two great uses, however, of plate glass are for the glazing of shops, mansions and the better class of houses, and for mirrors. As an instance of the improvement in this manufacture, in the memory of people now living, a mirror 4 feet by 3 feet was considered a large one, and very valuable; but at this time a glass 14 feet long and 8 feet wide, and comparatively speaking very cheap indeed, may be seen at Donne's warehouse in Leadenhall-street.

The polishing of the plates having been satisfactorily completed, they are washed with water, and are either removed to the ware-room for sale, or, in case of their being intended for mirrors, to the silvering apartment. The last process used in a plate-glass manufactory is that which is called silvering. The application to the posterior surface of mirrors, of some substance that will accurately reflect the rays of light falling upon them, is absolutely necessary to render them useful. The substance which has been found to answer this purpose best is mercury; which, as it cannot be applied alone in its fluid state, is, by a partial amalgamation, previously made to adhere to the surface, and afterwards to incorporate itself with the substance of a very thin leaf of tin foil.

There has been recently introduced a new and patented process for coating glass surfaces with a deposit of pure silver. This method is quite distinct from one proposed a few years since, for effecting the same object by the agency of the essential oils, which costly materials, with the many objections attending their use, are entirely superseded in the present process by the employment of zaccharine solutions. The deposit of silver is exceedingly thin (a few grains per square foot), and the expense of working has been reduced within such limits as give every prospect of its adaptation to a multitude of useful and ornamental purposes—especially as the brilliancy is greater and the colour warmer and more agreeable than that of the amalgam of tin and quicksilver with which our ordinary looking-glasses are coated, and as it is applicable to every variety of curved surface, the inside of the smallest glass tube being silvered with the same facility as a flat surface. Coloured glass thus coated adds its colour to the metallic brilliancy of the silver seen through it, and thus the effect of gold, bronze, and steel, can be produced in addition to the many harmonious combinations of silver and coloured glass, which the cutting and engraving of surfaces flashed with a thin layer of coloured glass will produce. The silver is protected from tarnishing by the glass to which it adheres, and at its outer surface by a preservative coating of cement; and, thus, by its permanent reflective brilliancy, it is pre-eminently suited for reflectors for lighthouses, and railway signals, and for reflectors generally. Its application to ornamental table glass, to epergnes, toilet bottles, flower vases, for instance, are endless; and it is no less suitable for shop-front fittings, for covering up iron pillars, for curved panels; and when embossed or in combination with marbles, ebony, &c., for interior decorations, to cornice mouldings, chandeliers, finger-plates, door-knobs; and, in short, in the hands of the architect, being a new material, its employment will be ruled by his applicative talent.

T. L. DONALDSON.

NOTES IN THE PROVINCES.

A NEW stained-glass window has been put up at the east-end of the chancel of Little St. Mary's Church, Cambridge, by Mr. Bolton, now engaged within the precincts of King's College. It contains 350 square feet of glass, and is formed of six compartments, with three different patterns. The cost was about 233*l.*, defrayed by subscription, the Society of St. Peter's College being liberal contributors.——The execution of the bas-relief for the Nelson Column at Charing-cross has prevented the Tindal statue from being cast as yet, but it is expected to be finished, and put up by the March assizes. It has been determined, says the *Chelmsford Chronicle*, to place it wholly outside of the stone pillars in front of the (Essex) shire hall.——Plans and estimates, &c., for the enlargement and alterations of St. Nicholas's Church, Worcester (to which 2,500*l.* was lately anonymously contributed), are to be shortly called for.——A gas consumers' company is to be formed at Bristol, for the distribution of gas at 3s. per 1,000 cubic feet.——The interior of the Guildhall, at Bath, has been cleaned, painted, and re-decorated by Messrs. Clare, at, it is said, a very low price. Much of the woodwork appears to be done in grained oak, with imitation of marble and granite in pedestals, skirting, &c., relieved by a little gilding in the capitals, light buff ceilings and walls, &c.——The talk of restoring the large west window of Leominster Church has been revived.——An east window has been placed in Eccleshall Church. It is lancet-shaped, and of three lights. Messrs. Drury and Smith were the artists, and a parishioner paid the cost.——It is proposed to erect a large public hall at Bradford as well as at Leeds.——The hill of Hoad, near Morecambe Bay, has been fixed on by the Admiralty as the site of Sir John Barrow's monument.——A new congregational church lately erected at Berwick, Mr. Oliver, jun., architect, was formally opened on the

18th ult. The style is Early English. In the western gable, which is surmounted by a buttressed belfry, there is a large triplet window. The structure is of the following dimensions:—From outside to outside 50 feet in front, 70 feet in length, and 80 feet high to the top of the belfry. One roof spans the entire width, which is of Queen-post construction. It has cost a little more than 1,000*l.* (ground exclusive), and is competent to accommodate 500 persons. We do not pretend to explain how such things are done.——It is proposed by the superintendent of streets and buildings at Edinburgh (Mr. Blyth) to widen the north bridge of that city, by adding in all upwards of 5 feet in breadth to the foot pavements, taking away the present heavy balustrades, and substituting a light railing, covered outside with sheet zinc or iron, to the height of 4½ feet, the rail above being ornamental as well as light; the whole to be secured at intervals by stays. The ugly dead walls at each end he also proposes to replace with the centre balustrades.

NEW WELSH EDUCATIONAL INSTITUTION.

ON the 13th ult., the first stone of the new Educational Institution at Llandovery was laid by the Lord Bishop of St. David's, the object of which is to enable the sons of the middle classes of Wales to enter into honourable competition with their hitherto more favoured brethren on the eastern side of the Severn.

The building, as we understand, will be in the Gothic style, of a collegiate character, irregular in outline. The walls will be of a light grey stone of the locality, with Bath stone dressings. The plan comprises a large examination-hall with open timber roof, four class-rooms, cloak-room, dining-hall, committee-room, library, teachers'-room, dormitories for about thirty boarders, sick-wards, bath-rooms, lavatories, kitchens and other offices, and a commodious residence for the warden and his family. The works are to be completed in twelve months. Messrs. Fuller and Gingell are the architects. After the ceremony, about eighty of the supporters of the institution dined together, the Venerable Archdeacon Williams acting as the chairman.*

The efforts now making in Wales to raise the intellectual character of the people can scarcely fail to produce an advantageous result, and must be regarded by all with interest.

Books.

Church and Chapel Architecture, from the earliest period to the present time; with an account of the Hebrew Church. By ANDREW TRIMEN, Architect. London: Longman and Co., 1849.

THE most novel portion of the volume named above is an account of the Hebrew Church, commencing with the Temple of Solomon, and ending with the new synagogue in Margaret-street, Cavendish-square; and the most useful part of it is a collection of one thousand mouldings, collected from mediæval structures in twenty-seven counties in England. "These are arranged in their proper chronological order, and, as far as possible, in a regular series in each order." It is to be regretted that no scale is given with these. Mr. Trimen has collected much useful information.

* The chairman warmed into eloquence when he spoke of his country. He reminded the meeting that George the Fourth, in passing through Wales, was so struck by its scenery, as to exclaim, "By Jove, this land was well worth fighting for." It *was* well worth fighting for; so thought the Saxon and Norman of old; but never yet did the foeman set foot as conqueror in this valley. He believed that had Scott or Southey selected this district their inspiration would have been kindled, and their imaginative spirits would have been able to soar in a higher and purer atmosphere than those which they found elsewhere. We have here more to show in the present, more to point to in the past, than the Trossachs can boast. We have, 22 miles from here, amid the region through which the tributaries to the Towy flow, through rugged courses—the caves of Twm Shon Catty—replete with the wildest scenery which imagination can conceive of, or the pencil of painter ever depicted. We have in another spot Castell Cerrig Cennin, a fragmental fort that has towered frowningly o'er the vales which, far below, it overlooks, from time unknown. We know it not much by name in history, for history speaks more of the vanquished and the fallen than of that which stands unshaken amidst all the changes and convulsions by which nations are overthrown, or cities and lordly castles become dismantled and untenanted. He believed that the day would come, with the aid of such institutions as they had that day laid the foundation stone of, when these scenes would find a chronicler, and when Llandovery and its neighbourhood would become as familiar to the travelled Englishman or foreigner as the land on which the genius of Scott has conferred immortality.

Modern Tombs, or Gleanings from the Public Cemeteries. Measured, drawn, and etched, by ARTHUR W. HAKEWILL, Architect. London: Longman and Co.

THIS is an endeavour on the part of Mr. A. Hakewill to draw the attention of the public to the very erroneous system so generally pursued in England, of employing the mere mason and mechanic to design tombs, instead of calling in the sculptor and architect. The present part (one of four), contains fifteen plates, and the whole, when finished, will exhibit fifty designs. The first etching in the book, is a representation of a large monument recently put up in the West London Cemetery, at Brompton, at a cost of 400*l.*, in memory of John Jackson, the celebrated pugilist. It is about 12 feet high, surmounted by a couchant lion, and displays two upright figures of athletæ, one at each end, in full relief. Mr. Butler was the sculptor. We shall have an opportunity to speak of the work more at length on the appearance of another part, and in the meanwhile recommend it for purchase.

The Fine Arts Almanac, or Artists' Remembrancer for 1850. London: Rowney and Co.

This work is edited by Mr. R. W. Buss, and contains a large amount of valuable information and agreeable reading. The constitution of the various art exhibitions, the names of officers and the regulations of art societies and schools, &c., &c., are set forth very fully: some valuable information is given on the subject of costume; and the notes of the twelve months, which occupy 80 pages of small type, comprise memoirs of numerous artists and art-lovers, written in a pleasant style. Mistakes have, of course, crept in: thus, Sir C. Bell's death is placed under two dates—29th April and 29th November—with a notice of him in each case; but these it is difficult to avoid in stating a large number of facts, and Mr. Buss is entitled to great praise for the able manner in which he has executed his task.

Miscellanea.

STUDENTS' SOIREE, MANCHESTER SCHOOL OF DESIGN.—An idea, originating with the students, and continued with the countenance of the council and the masters, was successfully and happily carried out at the Manchester School of Design on Wednesday week. The school was temporarily converted into a saloon, and among the guests invited by the students to their "soirée" were the principal, Mr. Hammersley, and his colleagues, Mr. Kidd and Mr. Dodd, besides various members of the council, students from Nottingham, and others. The walls were adorned with the fruits of many a day's labour in the "saloon" itself. The senior student, Dr. Charles Bell, being called to the chair, addressed the meeting, and while pointing attention to what had been already done, expressed a hope that Manchester would show in the course of the opening year that it was about to become as distinguished for design as it had been for manufacture. Mr. Hammersley, in responding to a complimentary vote, gave his students some good wholesome advice, not the less worthy some of it of serious adoption, that it was given in good-humoured banter, about the irreverence of standing with covered heads in presence of the works of Phidias and other great masters, with a familiar nod for Jupiter, a sort of shake of the hand for Apollo, and a strut with tucked coat tails, and other liberties of irreverence, amongst the *dei minores*. Tokens such as these betrayed a downright incapacity to appreciate art, and were quite inconsistent with that earnestness of spirit which a worthy student ought to manifest. Mr. Kidd was duly honoured with a respectful vote. Mr. Brook, in proposing "The architectural, geometric, and perspective classes," with thanks to Mr. Dodd, drew attention to the fact that many of the architectural drawings were executed by workmen, who laid down their tools and took up the pencil after a hard day's work.

PROJECTED WORKS.—Advertisements have been issued for tenders, by 14th inst., for the erection of carriage sheds, at various points on the South-Eastern Railway; by 20th, for the erection of schools at Durdham Down, near Bristol; by 21st, for the works or buildings for stations to be erected on the Great Northern Railway; by same date, for the execution of the whole or any portion of the stations, warehouses, gate lodges, locomotive buildings, &c., on same line, between King's-cross and Peterborough; by 11th, for the erection of St. Luke's parsonage-house, Leeds; by a date not specified, for the erection of two coal staiths on the Tyne; by 7th, for the several works required for the enlargement of the Wesleyan Chapel, at Pontefract; and by 9th, for the mason and brickwork, metal girders, &c., in the erection of coal depôts in the central station at Leeds.

COMPETITIONS.—Advertisements have been issued for plans, &c., by 14th February, for a new workhouse for the Wortley Poor-law Union, to accommodate 150 inmates, as advertised,—no payment for plans not approved and adopted by the guardians; also by 19th inst., for alterations and additions at Stapleton Asylum, for the corporation poor, Bristol: no specific details, conditions, or terms.

IMPROVEMENTS IN EARTHENWARE PIPES, &c.—A patent has been granted to Mr. B. A. Burton, of Holland-street, Southwark, for improvements in the manufacture of pipes, tiles, bricks, stairs, copings, and other articles required for building purposes. The process hitherto adopted in the manufacture of pipes from plastic materials consists of forcing the clay through a die, so as to form the pipe, and afterwards baking the pipe in an oven. In addition to this process, Mr. Burton proposes, after the pipes have been formed, and whilst in a plastic state, to subject them to a certain amount of pressure, by passing them between rollers, whereby it is said that pipes, after they have undergone this process of compression, are not only stronger, and consequently more durable, but also more regular in their structure, and smoother; so that they will offer less resistance to the passage of fluids, and will also be less liable to the accumulation of deposit. The clay having been forced through the die in the form of a pipe, slips over a mandrill, attached to the centre part of the die; the lower end of the mandrill being made to project a little beyond the centre line of four rollers, all moving in the same direction, and with the same surface velocity, so that the clay pipe is drawn between the rollers, and over the end of the mandrill, whereby the particles of matter become compressed or consolidated to such an extent, we are told, that, when baked, they have been found, by repeated experiments, to be upwards of 75 per cent. stronger than pipes manufactured in the ordinary way. In the case of a stairs tread, the rollers forming the front and top of the step may be engraved so as to form an ornamental step. The inventor states, that by the application of the eccentric, or convolute rollers, a great variety of articles applicable to building purposes may be moulded and compressed as above described. In addition to the above, the specification describes a mode of making bends for pipes; also a variety of machines for cutting socket or rebate and screw joints upon the ends of pipes.

COPYISM, BRISTOL.—I have always felt grateful to you for perseverance in denouncing mere copyism in art, and I trust you will therefore allow me to make a few slight additions to your recent notice of a new church in Bristol. 1. The windows, with one single exception, have been obtained from "Brandon's Analysis," and this one exception is a window obtainable everywhere. 2. The gable crosses have been procured from the same source. 3. The gable knees ditto. 4. The parapet of tower ditto. 5. The font ditto. 6. The tracery of screen ditto. I am not quite certain about the south doorway, and the sedilia, &c. Truly, Sir, matters have come to a pretty pass when, in a city once the second in rank in England, a city famed for its commerce, its wealth and its arts, and, above all, for its architecture, a church formed from the above recipe should have been erected under the auspices of a society which has constituted itself the *arbiter* of the ecclesiastical architecture of the "far west." B.

PROGRESS.—At the annual *soirée* of the Beverley Mechanics' Institute, in connection with the East Riding Union of Institutes, a fortnight ago, the Rev. Mr. Aspinal, rector of Althorpe, said, "When we see all that is now doing to stimulate and develop the intellect of the masses, the printing-press, that mental railway so busily at work, the cheap trains of literature laid on in all directions, the steam of education well up, and the engineers and stokers, schoolmasters and tutors, so actively employed in every quarter of the land, when, I say, we behold such things we may venture to anticipate the arrival of a time when an untaught and ignorant man in society shall be as great a rarity as a mummy translated from the Egyptian pit to the British Museum; and as education makes its way from city to town, from town to village, from village to cottage, in the valley and on the hill side, as it fulfils its glorious, humanizing, civilizing, Christianising mission, comforting the solitary spirit toiling at his loom, illuminating the workshop, irradiating the factory, inspiring the masses, spreading itself into the most remote nooks and corners of the land, and accompanying and elevating the mariner in his night-watches upon the ocean,—as I behold and rejoice in such things, I cannot help thinking that there is a time, a good time, coming when an ignorant man, thrusting himself into any company, any class of society, shall be looked upon as *the frightful example*, to remind us of the hideous yoke of darkness from which we have escaped. But what will become of society if you thus make the advantages of education universal amongst all its gradations? Will not each class be treading upon the heels of that before it, and so all be thrown into chaos and confusion? No such thing. Look at the time, the means, the opportunities which those who occupy the higher walks of life have to devote to their intellectual cultivation and improvement. If, with these at their command, they cannot keep before the poor working man, the toiling mechanic, the laborious clerk, who have only the small residue of their after hours, when the business of the day is over, to spend at the institute, or bestow upon reading at home, then do they deserve, not only that these last should tread upon their heels, but upon their toes likewise, and make them most uncomfortable until they quicken their pace, and do their duty to themselves, to their age, and to the advantages which they possess."

DERBY.—Plans have been prepared for the enlargement of St. Werburgh's Church, Derby. The works are to be proceeded with early in the spring. A faculty has been applied for by the Vicar of St. Peter's Church, Derby, to enable him to throw down a very ugly gallery extending across the west-end of chancel, and entirely obstructing the view of the stained-glass east window from the nave, as well as shutting out the major part of the galleries from the view of the clergyman at the altar. The faculty is also to include powers to enlarge and alter the existing fabric, so as to give 400 additional sittings. The population of this parish is 16,000, and only church accommodation for 640. The whole pile should be taken down. A new refreshment-room has been erected in the Arboretum, from the designs of Mr. Stevens. The new church of St. Paul's, at Derby, is rapidly approaching completion. The smallness of the west-end and aisle windows have a very bad effect. Want of funds was the cause, *on dit*. A great number of new buildings are in course of erection at Derby, which promises to become an important town. The improvement commissioners have been at work lately. The Derby Water-works are progressing, and should be quickly finished, to enable the sanitary measures to have their proper effect. Much remains to be done. The subject of the improvement of the dwellings of the poorer classes has been advocated in the *Mercury*, by the Vicar of All Saint's, and Mr. Wigginton, backed by a leading article.

THE NINEVEH-ROOM IN THE BRITISH MUSEUM should be visited by all who have the opportunity. The sculptures which it contains, full of deep interest, are vividly suggestive. On the day after Christmas-day 20,000 persons passed through the Museum. The most perfect order prevailed.

METROPOLITAN SEWAGE MANURE COMPANY.—The last report of the Directors to the shareholders in the Company, now printed, states that "25 occupiers of land have become customers; and that they have contracted for the supply of the sewage to above 100 acres of land, at an aggregate rental of 400*l.* per ann. But the land thus actually contracted for, and already receiving the benefits of a supply of sewage, is only one-eighteenth part of the whole area which the present works of the Company are constructed to supply. Consequently, when the remaining occupiers (satisfied by the evidence of results, as they may see them in the lands of their neighbours who are now using the sewage) shall avail themselves also of its advantages, the annual revenue in rental of sewage will be about 5,000*l.* per annum. It is found, by careful calculation, that this revenue would pay a dividend of 10 per cent. to the shareholders upon the capital employed in this district, and its proportion of the preliminary expenses." The replies from market-gardeners and others who have used it, seem satisfactory. The Directors are endeavouring to reduce their expenses. The balance sheet is not given with the report.

METROPOLITAN SEWERS COURT.—A special court was fixed to be held on the 28th ult., for the purpose of confirming the bye-law with reference to the appointment of Mr. Frank Foster as engineer to the commission, at 1,500*l.* a-year. The number of commissioners required by the Act of Parliament to be present not being made up, the court was adjourned for a fortnight. A general court was held afterwards, but the business transacted possessed no public interest. The commissioners may believe us implicitly when we say that the above appointment is regarded as a lavish expenditure of the rate-payers' money, and is very unpopular.

BRIDGEWATER PARISH CHURCH.—Tenders being sought for re-seating Bridgewater Church, Messrs. Dickson and Breakspeere, architects, six were sent in as follows:—

Hutchings, Bridgewater	£550
Perry, Weston-Super-Mare	479
Mason, Exeter	454
Showbrook, Taunton	436
Wainwright, Bridgewater	416
Pollard, Taunton	415

Mr. Wainwright's tender was accepted. Mr. Pollard, whose tender was the lowest, has addressed us on the subject, complaining of the preference given to another, and maintaining that the lowest tender should be accepted if the party be responsible, or at all events when circumstances render a different mode of procedure desirable, that he should be remunerated for his trouble and expenses. As a general rule, we agree in this. A townsman would naturally have an extra claim, and the difference here was very small; still it is only fair, when competition is invited, that the lowest tender, when made by a responsible and competent party, should be accepted.

SCARBOROUGH INDEPENDENT CHAPEL COMPETITION.—Mr. Raffles Brown has addressed communications to us with reference to a paragraph on this subject in a previous number (p. 608, *ante*), showing that the instruction contained no stipulation that the competitors' names should be concealed, and were not intended to do so. Mr. Brown will find, on reference to the paragraph, that it goes no farther than giving the assertion of one of the (seven) competitors, that he had personally been led to consider the designs were to go in anonymously.

BURNING THE DEAD.—An association has been formed, at the City of London Mechanics' Institution, to promote the practice of decomposing the dead by the agency of fire. The members propose to burn, with becoming solemnity, such of their dead as shall have left their remains at the disposal of the association. The entrance fee is 1*s.*; and the council meet to enrol members, &c., on the second and last Wednesday in each month.

SCHOOL OF DESIGN, SOMERSET HOUSE. There is to be an exhibition of the works of the students at the School of Design next week. We understand that several of the masters intend to exhibit ornamental designs of their own, in proof of their ability.

PROFESSOR COCKERELL commenced his course of lectures on architecture at the Royal Academy, on Thursday, the 3rd inst.

THE ADELPHI THEATRE, STRAND.—The extravaganza here, "The Model Man," a laughable *travestie* of "Frankenstein," has several very clever scenes, especially a Gothic chamber with fire-place, and statues lining the sides. A lamp-post in one scene is worth notice, and in the last scene, of fairy caverns, the effect of great extent is cleverly produced. Bad drains, water, and London churchyards are rightly handled. "I come," says a water nymph, "from coral groves and crystal gems," and the natural remark is, "Lor! what a different river from the Thames."

BATHS AND WASHHOUSES IN FRANCE.—It appears from a letter by Mr. W. Hawes, in the *Times*, that M. Dumas, the French Minister of Agriculture and Commerce, has announced the intention of the President of the Republic to prepare a *projet de loi*, for the establishment of public baths and washhouses in France.

THE EXHIBITION OF 1851.—At the Royal Dublin Society's Rooms, last week, Mr. Richard Turner, who constructed the Conservatory, at Kew, as well as that in the Regent's-park, exhibited the model of an enormous structure of iron and glass, suggested for the proposed exhibition in Hyde-park.

HOUSES FOR THE VERY POOR.—A correspondent says as regards the plan proposed by Mr. Netherway for small houses, that the idea of dividing the accesses to the stories is carried out at "Turner's-buildings," on the estate of Sir James Esdaile, Wenlock Basin, City-road.

LEICESTER WORKHOUSE COMPETITION.—By a vote of thirteen to twelve, the guardians have selected the plan of Mr. W. Parsons. The estimated cost of the enlargement on this plan is 12,500*l.*, or with the site, about 14,000*l.*

TENDERS

For the Northampton Corn Exchange: Mr. Alexander, and Mr. Hull, Architects.

	With side windows to Great Hall, and using the old materials.	With blank windows to Great Hall.	Using no old materials: ground cleared.
	£. s. d.	£. s. d.	£. s. d.
Pollock and M'Lenan, London	9,488 0 0	9,238 0 0	9,588 0 0
Curtis, Stratford	8,894 0 0	8,644 0 0	8,804 0 0
W. Jerrom, Leicester	8,634 0 0	8,537 0 0	8,614 0 0
W. Trego, London	8,579 0 0	8,295 0 0	8,979 0 0
W. A. Watson, Whitacre	8,098 0 0	7,868 0 0	8,098 0 0
Sisson & Robinson, Hull	8,079 0 0	7,789 0 0	8,479 0 0
C. Ireson, Northampton	8,060 0 0	7,800 0 0	8,460 0 0
T. Burton, London	7,890 0 0	7,680 0 0	7,880 0 0
J. Ferguson, Nottingham	7,728 0 0	7,480 0 0	7,357 0 0
G. Thompson, Derby	7,495 0 0	7,170 0 0	add 150*l.*
*R. Dunkley, Blisworth	7,404 6 4	7,170 4 8	7,670 4 8
W. Parker, Thrapstone.	7,317 0 0	7,069 8 0	7,950 0 0
†C. Smith, London	6,141 0 0	5,918 0 0	6,741 0 0

* Accepted.

† Mem.—An accidental error of 3,000*l.*, afterwards discovered by Mr. Smith.

For the Northampton Bank: Mr. Law, Architect.

Coker, Desborough	£2,623
W. and A. Williams, Luton	2,450
Boddington, Northampton	2,440
Sisson and Robinson, Hull	2,389
Jerrom, Leicester	2,322
Dunkley, Blisworth	2,240
Ireson, Northampton	2,200
Green, Leamington	2,175
R. and J. Curtis, London	2,144
Burton, London	2,085
Ferguson, Nottingham	2,073
Parker, Thrapstone	2,060
Thompson, Derby	2,025
Green, Northampton	1,995
Watson, Whitacre	1,945
Cosford and Fisher, Northampton (accepted)	1,866

BUILDINGS AND MONUMENTS,

MODERN AND MEDIÆVAL;

Being Illustrations of the Edifices of the Nineteenth Century, and of some of the Architectural Works of the Middle Ages.

Edited by GEO. GODWIN, F.R.S.,

Fellow of the Institute of Architects; Corresponding Member of several Societies.

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MEETINGS OF SCIENTIFIC BODIES

Held during the ensuing week.

MONDAY, Jan. 7.—Institute of Architects, 8 p.m.

TUESDAY, Jan. 8.—Institution of Civil Engineers, 8 p.m.

THURSDAY, Jan. 10.—Royal Society, 8½ p.m.; Society of Antiquaries, 8 p.m.

TO CORRESPONDENTS.

"One of the 32" (are we to understand that the "approved plans" were for certain obtained in the manner stated, and no payment made for them?), "T. D. K.," "W. C.," "Anti-Utilitarian," "T. E. B.," "J. S.," "J. M." "B. S.," "Banbridge," "A. A.," "H. S." (the letter is merely an *assertion*, for which we have not space), "A. B." (each volume has an index), "T. F. T.," "Quondam" (we have not yet been able to read the article in question, but will do so forthwith), "Architectural Nomenclature" (next week).

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

"*Books and Addresses.*"—We have not time to point out books or find addresses.

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"CHARLES BARRY."

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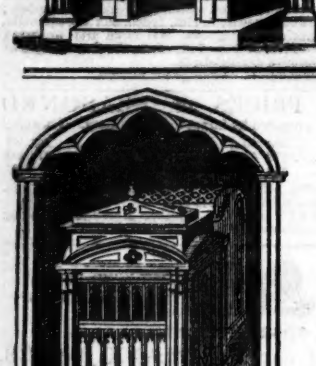

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CLERKS of WORKS have their particular attention called to the above establishment. A Book of Designs forwarded on application.

Works of all kinds prepared and sent off per railway—fixed or not, as required.

DAIRIES fitted up with MARBLE or SLATE SHELVES.—MINTON'S Encaustic and White or Blue and White Porcelain Tiles in great variety of pattern.

STIRLING'S BELVEDERE SLATE WORKS, Belvedere-road, Lambeth.—A reduced list of prices of the best WELCH SLATE SLABS, planed both faces, will be sent on application (post paid) being made, and inclosing a postage stamp. The prices are under those advertised for inferior slates.

PIMLICO SLATE WORKS.—GREAT REDUCTION in the PRICE of SLATE.—Mr. MAGNUS has the pleasure to publish the following reduced prices for Welsh Slate Slabs of the finest quality, with sawn edges, and planed both faces:—

	Thick.						
	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	
	d.	d.	d.	d.	d.	d.	
Under 4 ft. long, or 3 ft. wide	3½	5	6	7	9	12	℔ ft. sup.
Ditto 5 ft. do., or 3 ft. do.	4	5½	7	8	10	14	do.
Ditto 6 ft. do., or 3 ft. do.	4½	6½	8	9	10½	16	do.
Ditto 7 ft. do., or 3 ft. do.	5	7	9	10	11	18	do.

Larger Slabs in proportion.

	Thick.						
	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	
	d.	d.	d.	d.	d.	d.	
Cutting to order	1	1	1½	1½	1½	2	℔ ft. sup.

FURTHER REDUCTION IN THE PRICE OF CISTERNS.

Cisterns above 100 gallons, planed both faces, inch thick, grooved and bolted, 1*s.* only per foot super., or 2*s.* per foot cube (outside dimensions). Fixing within five miles of the manufactory, 3*d.* per foot super., or 6*d.* per foot cube. Enamelled boxed Chimney-pieces, variously marbled, hitherto priced at 40*s.* to 50*s.* now reduced to 25*s.* and 30*s.* The above prices are all net to the trade.

Mr. Magnus will send his book of Drawings of Chimney-pieces, and printed price-list of ditto, free to any part of the country, on receipt of 3*s.* in postage stamps (to be deducted from first order received,) and which will be subject to a very liberal discount to the trade.—Address, 39, Upper Belgrave-place, Pimlico.

MARKET WHARF, REGENT'S-PARK BASIN.—Messrs. MARTIN and WOOD (late Scoles and Martin) solicit the attention of Builders, Masons, and others, to their stock of Portland, York, and Derby Stone; also Bangor Slates, Lime, Cement, Plaster, Bricks, Tiles, Laths, Fire-goods, Fire-stone, &c., sold at the lowest possible prices for Cash. Portland Head-stones, Ledgers, Steps, Landings, &c., cut to order on the shortest notice. Tarpaulings let on hire. A Stock of Northen's Drain Pipes, Syphons, &c., always on hand. Mortar, Lime and Hair, Fine Stuff, &c.

BATH STONE OF BEST QUALITY.

RANDELL and SAUNDERS, QUARRYMEN and STONE MERCHANTS, BATH.

List of prices, also cost for transit to any part of the kingdom, furnished on application.

BATH STONE.—Messrs. RANDELL and SAUNDERS, Quarrymen, Bath, have appointed Messrs. MARTIN and WOOD their sole agents in London. M. and W. beg to inform Architects, Masons, Builders, &c., that a large assortment of the much approved CORSHAM DOWN and other BATH STONE will always be kept at the Depot, opposite the Great Western Railway Station, Paddington. Orders will also be received at Market Wharf, Regent's-park Basin.

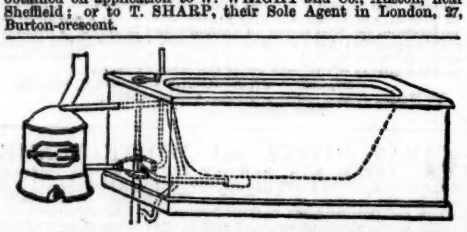
CAEN STONE, SELECTED FOR EXTERNAL WORKS.—LUARD, BEEDHAM and Co., Quarry Proprietors and Importers from Allemagne.

AUBIGNY STONE from the Quarries, near Falaise, Calvados Department.—Aubigny is of similar colour to Portland Stone, its texture finer than Portland, price and labour of working about the same.

RANVILLE STONE from Ranville Quarries, near Caen, Normandy.—Suitable for strong works, wharf and quay walling, price and labour similar to Caen Stone.—Depôt, Caen Sufferance Wharf, Rotherhithe; Vauxhall-bridge, Westminster; No. 8 Wharf, Paddington Basin; Northern Wharf, Battle-bridge; and Kensington Basin.—Information and samples supplied from the Office, 13, Southwark-square, Borough.

ANSTON STONE, used for Building the New Houses of Parliament.—W. WRIGHT and Co. beg to inform Architects, Engineers, Builders, and others, the Anston Stone can be supplied in any quantity on the shortest notice. This valuable stone, so celebrated for its durability, colour, and texture, is well known, having been selected in preference to all others, by the Commissioners of Woods and Forests, for building the New Houses of Parliament. It is very superior for Monuments, Tombs, &c. &c.

W. Wright and Co. have made arrangements to have a stock always on hand at Brine's Marble and Stone Wharf, Horsfall-basin, Maiden-lane, King's-cross.—Any further information can be obtained on application to W. WRIGHT and Co., Anston, near Sheffield; or to T. SHARP, their Sole Agent in London, 27, Burton-crescent.



BATHS.—TYLOR'S IMPROVED APPARATUS, consisting of ENAMELLED MARBLE BATH, COPPER CIRCULATING BOILER, and three-way cock, with index-plate for hot, cold, and waste water, complete. Does not require brickwork, is portable, and in most cases can be supplied ready for use. Apply to the ironmongers and plumbers, or the manufacturers, J. TYLOR and SON, Warwick-lane, London.

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PATENT METALLIC LAVA, Manufactured only by Messrs. ORSI and ARMANI. WHITE AND ORNAMENTAL, for the interior of Churches, Museums, Halls, Vestibules, Conservatories, &c. &c.; BROWN, for Foot Pavement, Flooring, Covering Railway Arches, Terraces, Roofs, &c. &c. Specimens and list of prices can be obtained at the offices, 6, Guildhall Chambers, Basinghall-street, City; and at the office of "The Builder."

SEWERAGE of LONDON.—The attention of the COMMISSIONERS appointed to determine upon the most efficient material for the Construction of the Sewers of London is particularly directed to the ASPHALTE of SEYSSEL, which, more than any other material, is applicable to the constructing and internal coating of Brick Culverts, and other channels for drainage. The experiments made by the Royal Artillery on the Embrasures of Plymouth Citadel, constructed of Seyssel Asphalted Brickwork, under the orders of the Honourable Board of Ordnance, have fully proved the superiority, adhesiveness, and strength of Seyssel Asphalte over all other cementitious compositions.—A printed account of these experiments can be had on application to J. FARRELL, Secretary, Seyssel Asphalte Company, "Claridge's Patent." Established 1838.

Note.—The application of the Asphalte of Seyssel is specially recommended by the Commissioners on the Fine Arts, for covering the ground line of Brickwork in marshy situations, and it has been suggested that it would be peculiarly applicable for covering the Areas of closed Graveyards, and for the construction of Catacombs.

FUNERAL FEATHERS.— TO UNDERTAKERS, UPHOLSTERERS, CABINET-MAKERS, and BUILDERS.—G. SHADBOLT and Co., Funeral Feathermen, beg to inform the trade that they have REMOVED their FEATHER BUSINESS from Church-street, Soho, to No. 9, Walbrook, City (near the Mansion House), where all orders will in future be received, and punctually attended to in town or country.

THE VIEILLE MONTAGNE ZINC MINING COMPANY beg to inform the Public that SPECIMENS from their Mines, Works, and Founderies of Belgium and France are daily EXHIBITED at L'Exposition des Products de L'Industrie Française, 15, George-street, Hanover-square.

ZINC, from the VIEILLE MONTAGNE MINING COMPANY, is the purest known, free from alloy of iron, lead, or sulphur. It is supplied in spelter for brass founders, &c., and in sheets for ship sheathing and roofings of all kinds, and nails of all dimensions. It may be had at the following Agents', who have always a large stock in hand:—

London—Messrs. Charles Devaux and Co.; Mr. Charles Jack; Mr. William Skirrow.
Birmingham—Mr. John Barwell.
Liverpool—Messrs. E. Zwelchenbart and Co.
Manchester—Messrs. Richard Johnson and Brother.
Leeds—Messrs. J. G. and T. Heaps.
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Leith—Messrs. Robert Anderson and Co.
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Bristol—Messrs. Morgan McArthur and Co.
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Zinc from 20 to 24 oz. per square foot is generally used for roofings, which come at least one-third cheaper than slate coverings; and the ship sheathing, which lasts from five to six years, comes two-thirds cheaper than copper or yellow metal. And if the zinc coverings are made of the Vieille Montagne Zinc, and under the superintendence of Mr. FREDERICK BROWN, the surveyor of the Company (for which no charge whatever is made), a guarantee will be given of its durability.—For further particulars and prices, apply to Mr. H. F. SCHMOLL, General Agent for England, at the Company's Offices, No. 12, Manchester-buildings, Westminster-bridge, London.

FIRE BRICKS, GREAT FALL.—WARD and COMPANY, Honduras Wharf, Bankside, London, have the pleasure of informing the trade, &c., that they have just landed SEVERAL CARGOES of their best manufactured FIRE BRICKS, in Stourbridge, Newcastle, and Welsh. Purchasers should avail themselves of the present low prices. STOURBRIDGE BRICKS, admitted to be the best in use, as proved by houses working the greatest heat, 9*l.* 5*s.* per thousand. Their highly celebrated NEWCASTLE ditto, in such general consumption in gas works, breweries, by engineers, and others, 4*l.* WELSH ditto, very superior, from having less iron in them than usual, 4*l.* 15*s.* Lumps, Tiles, Shield Guards, Retorts, Fire Clays, and Loam equally cheap. Cowley bright square Stocks, 35*s.* per thousand; Patent Malting Tiles, Windsor Oven ditto and Bricks; Country Pantiles, 30*s.* per thousand, plain ditto, 33*s.*, all other red goods; white and red Sanitary Pipes and Shapes, Dutch Clinkers, Suffolk Bricks, Dorking Lime, Concrete, Gravel, and river Sand, by freights or loads. Goods made to pattern in twenty-one days.

A liberal Discount for Cash.

BRICKS.—In consequence of the low price at which Brickmakers have, for some time past, been purchasing Ashes and Breeze, H. DODD is enabled to offer his bricks, which are of good quality, at the following low prices; and as his fields are only a quarter of an hour's walk from the City, H. D. earnestly requests purchasers will favour him with a visit, in order to inspect his stock and to judge for themselves.

Marle Cutters.....	30*s.* per thousand.	
Yellow Seconds.....	28*s.* 6*d.*	"
Pale Seconds	30*s.*	"
Paviors	42*s.*	"
Pickings	38*s.*	"

Marle Place, Half-washed Stocks, and Place Bricks, at equally low prices. These bricks are sound, well burnt, and unusually free from defects; a very large proportion of the Stocks being suitable for external facing. They will be delivered at the above prices anywhere within two miles of the fields.

Apply to HENRY DODD and Co., at the Counting-house, Hoxton Brickfields, Grange-walk, near the Rosemary Branch, Hoxton.

N.B. Red Pit Sand, of approved quality, constantly on sale, upon reasonable terms. In the erection of walls, where it is desirable that the work should be kept as free from damp as possible, this sand, from its not containing any saline matter, is acknowledged to be preferable to river sand.

GUTTA PERCHA TUBING may be buried in damp or marshy ground without injury. Acids, alkalies, and grease are without action upon it, and it is therefore valuable for conveying water, chemicals, &c. It is peculiarly valuable for liquid manure, drain, and soil pipes. Being a non-conductor, it is not affected by the frost of winter, like metal or leather. Its strength is extraordinary; the small half-inch diameter tubing having resisted a pressure of 250 lbs. on the square inch, without bursting. The smaller sizes may be had in 400 feet, and the larger in 50 feet lengths. The joints are easily made. The power which gutta percha tubing possesses as a conductor of sound renders it most valuable for conveying messages, in lieu of bells; and also for enabling the deaf to hear the sermon in churches, &c. Every variety of articles manufactured by the Gutta Percha Company.—Patentees, 18, Wharf-road, City-road, London; and sold by their wholesale dealers.